

DOCUMENT RESUME

ED 457 182

TM 033 278

AUTHOR Ghafoori, Bitia; Tracz, Susan M.
TITLE Effectiveness of Cognitive-Behavioral Therapy in Reducing
Classroom Disruptive Behaviors: A Meta-Analysis.
PUB DATE 2001-00-00
NOTE 20p.
PUB TYPE Reports - Research (143)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Behavior Modification; *Behavior Problems; *Cognitive
Restructuring; Elementary Education; *Elementary School
Students; Meta Analysis; *Outcomes of Treatment; Program
Effectiveness; *Therapy

ABSTRACT

A meta-analysis was conducted to evaluate the success of cognitive-behavioral therapy in reducing disruptive behaviors exhibited by school-age children in a school setting. Twenty-seven articles about studies using cognitive-behavioral therapy and a teacher measure of disruptive behavior were analyzed critically, and appropriate outcome measures were included in the analysis. Meta-analysis of these studies revealed that children who received cognitive-behavioral therapy displayed fewer disruptive behavior problems than did children who did not receive a cognitive-behavioral intervention. Cognitive-behavioral therapy used in conjunction with teacher-implemented contingencies was not found to be more effective in reducing disruptive behavior than cognitive-behavioral therapy alone. Also, no global difference in disruptive behavior was found relative to treatment administered in a school setting as compared to other settings. A difference in level of disruptive behavior was found with respect to the following factors: ethnicity, diagnosis, and socioeconomic status. (Contains 77 references.) (Author)

Effectiveness of Cognitive-behavioral Therapy in Reducing Classroom Disruptive Behaviors: A Meta-Analysis

Bitu Ghafoori
Susan M. Tracz

THE ERIC REPORTING SERVICE
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

B Ghafoori

THE ERIC REPORTING SERVICE
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☒ This document has been reproduced as
received from the person or organization
originating it.

☐ Minor changes have been made to
improve reproduction quality.

• Points of view or opinions stated in this
document do not necessarily represent
official OERI position or policy.

BEST COPY AVAILABLE

TM033278

Effectiveness of Cognitive-Behavioral Therapy in Reducing Classroom Disruptive Behaviors: A Meta-Analysis

Bitu Ghafoori and Susan M. Tracz
California State University Fresno

A meta-analysis was conducted to evaluate the success of cognitive-behavioral therapy in reducing disruptive behaviors exhibited by school-age children in a school setting. Twenty-seven articles employing cognitive-behavioral therapy and a teacher measure of disruptive behavior were critically analyzed, and appropriate outcome measures were included in the analysis. Meta-analysis of these studies revealed that children who received cognitive-behavioral therapy displayed fewer disruptive behavior problems than did children who did not receive a cognitive-behavioral intervention. Cognitive-behavioral therapy used in conjunction with teacher-implemented contingencies was not found to be more effective in reducing disruptive behavior than cognitive-behavioral therapy alone. Also, no global difference in disruptive behavior was found relative to treatment administered in a school setting as compared to other settings. A difference in level of disruptive behavior was found with respect to the following factors: ethnicity, diagnosis, and socioeconomic status.

School-age children exhibiting significant behavioral problems are often a challenge for teachers. These students frequently engage in behavioral deviancy, including aggression, hyperactivity, acting-out behavior, lack of self-control, and inattention (Robinson, Smith, Miller, & Brownell, 1999). Classroom teachers often report behavioral problems as a major concern, and psychologists or other mental health professionals are often called on to intervene with children who exhibit these problems. Classroom teachers are in need of strategies that can be incorporated efficiently into daily instructional routines to reduce the negative effects of disruptive classroom behavior (Robinson, Smith, Miller, & Brownell, 1999). The use of Cognitive-Behavioral Therapy (CBT) in the classroom represents a method for addressing the need to remediate behavioral excesses and deficits (Robinson, Smith, Miller, & Brownell, 1999).

Cognitive-behavioral procedures are a promising approach used in the treatment of childhood disruptive behavior disorders. CBT interventions recognize the complexities of the interactions among behavior, cognition, affect, social factors, and environmental conditions. CBT has been utilized in the school environment to target disruptive behavior by decreasing the social-cognitive deficits and distortions that children may possess. CBT interventions have the goal of mitigating aggression as well as other disruptive behavior problems by building appropriate social competencies in children before aggression becomes a deeply established method of problem solving.

Cognitive-behavioral procedures provide the student with the necessary tools to control their behavior. The self-regulation of behavior is accomplished by providing individuals with a cognitive framework to address a myriad of self-control, interpersonal, behavioral, and academic problems (Meichenbaum & Burland, 1979). Investigators have utilized particular CBT interventions such as social skills training, self-control/self-regulation approaches, relaxation training, cognitive-restructuring approaches, problem solving approaches, and cognitive modeling. *These interventions in classroom settings aid in decreasing the social-cognitive deficits or distortions that children may possess in an effort to eliminate disruptive behavior.*

Cognitive behavioral techniques are a viable treatment approach for disruptive behavior problems in children; however, analysis of their actual efficacy is necessary. Some studies have found that CBT decreases disruptive behavior in the classroom (Lochman & Lampron, 1986), while other studies have found that CBT has limited effects (Bloomquist, August, & Ostrander,

1991; Lochman, 1992). The present study assessed the effectiveness of CBT in decreasing disruptive behavior in the classroom by conducting a meta-analysis of existing research. Cognitive-behavioral therapeutic interventions were the foci of this study because of the difficulties posed for educational professionals by children exhibiting disruptive behavior problems.

Meta-analysis was selected as the means for analysis because it is an ideal method for summarizing results across a number of existing studies that have examined the effectiveness of CBT. Through meta-analysis, we attempted to answer the following questions: Is the overall effect of CBT positive according to the treatment outcome literature? Will teacher-implemented contingencies used in conjunction with CBT be more effective in reducing classroom disruptive behavior than CBT alone? Will treatment administered in a school setting be more effective than treatment administered in other settings? Will lower socioeconomic status subjects exhibit decreased levels of disruptive behavior at posttreatment when compared to subjects of higher socioeconomic status? Will differences exist in level of disruptive behavior when comparing results by the ethnicity of subjects? Will children diagnosed with Conduct Disorder exhibit decreased levels of disruptive behavior at posttreatment when compared to subjects with other diagnoses? A meta-analytic review of CBT studies analyzed the effect sizes obtained in the treatment outcome data reported in each study.

Method

Characteristics of Reviewed Studies

This meta-analysis reviewed a number of research studies conducted with children who exhibit disruptive behavior. To be included in this review, each study met the following criteria: (a) the children who were subjects in the primary study were in the 5 to 13 age range; (b) the primary study was published between 1987 and 1997; (c) the primary study compared pretreatment and posttreatment conditions; (d) the primary study focused on decreasing a disruptive behavior identified as problematic; (e) the primary study included a measure of disruptive behavior in the classroom as the dependent variable; (f) the treatment procedures were administered by a professional, paraprofessional, teacher, or parent; and (g) the primary study was written in English. These criteria resulted in 27 articles being identified, and these were included in the present analysis. Primary studies included in the review are listed in Table 1.

Table 2 summarizes selected characteristics included in this analysis. These characteristics include race, socioeconomic status, and diagnosis.

Table 1 Selected Study Characteristics

<u>Study No./Citation</u>	<u>Number of d's</u>	<u>d</u>	<u>p</u>	<u>N</u>
1. Bienert & Schneider (1995)	0			
2. Bierman, Miller, & Stabb (1987)	0			
3. Bloomquist, August, & Ostrander (1991)	10 (2 excluded)	0.13	.68	20
		-0.10	.78	16
		0.80	.01	20
		0.55	.12	16
		0.66	.04	20
		0.22	.52	16
		0.84	.02	20
		0.42	.23	16
4. Dishion & Andrews (1995)	3	-0.13	.61	30
		0.19	.48	27
		-0.06	.82	28
5. Dubow, Heuesman, & Eron (1987)	0			
6. Guevremont & Foster (1993)	6	0.39	.15	28
		-0.59	.03	28
		-0.43	.11	28
		-0.71	.01	28
		0.81	.00	28
		1.29	.00	28
7. Horn, Ialongo, Greenberg, Packard, & Smith-Winberry (1990)	0			
8. Horn, Ialongo, Popovich, & Peradotto ((1987)	8	0.55	.17	12
		0.58	.15	12
		0.42	.29	12
		0.74	.07	12
		0.28	.50	11
		0.43	.30	11
		0.40	.34	11
		0.52	.21	11
9. Hudley & Graham (1993)	18	0.11	.83	7
		-0.06	.91	7
		0.21	.67	7
		0.00	1.00	7
		0.18	.72	7
		0.47	.35	7
		-0.13	.79	7
		-0.20	.68	7
		0.28	.57	7
		0.19	.71	6
		-0.04	.94	6
		0.18	.74	6
		0.27	.61	6
		-0.44	.41	6
		0.33	.53	6
		0.00	1.00	6
		-0.42	.43	6
		-0.49	.36	6
10. Kazdin, Bass, Siegel, & Thomas (1989)	2	1.13	.02	10
		0.99	.04	10
11. Kazdin & Crowley (1997)	6 (1 marked & excluded)	0.53	.03	34
		0.35	.15	34
		0.47	.05	34
		1.26	.00	32
		1.32	.00	32

Table 1. Selected Study Characteristics (continued)

<u>Study No./Citation</u>	<u>Number of d's</u>	<u>d</u>	<u>p</u>	<u>N</u>
12. Kazdin, Esveltd-Dawson, French, & Unis (1987)	2	0.66 -0.42	.00 .00	120 120
13. Kendall, Reber, McLeer, Epps, & Ronan (1990)	1	1.11	.00	17
14. Lochman (1992)	7	0.21 0.71 -0.61 -0.71 0.53 0.57 0.28	.42 .01 .02 .01 .046 .03 .28	29 29 29 29 29 29 29
15. Lochman, Coie, Underwood, & Terry (1993)	0			
16. Lochman & Lampron (1988)	1	0.95	.06	9
17. Lochman & Lampron (1989)	0			
18. McGillivray, Cummins, & Prior (1988)	4	-0.02 0.33 0.18 0.50	.96 .38 .67 .23	13 13 11 11
19. Omizo, Hershberger, & Omizo (1988)	2	0.41 0.55	.39 .25	9 9
20. Phillips, Schwan, & Saklofske (1987)	2	1.06 0.83	.01 .04	12 12
21. Prinz, Blechman, & Dumas (1994)	4	1.12 0.64 1.42 1.27	.00 .01 .00 .00	165 31 18 12
22. Schneider (1991)	8	-0.56 -1.06 0.53 -0.53 0.05 -0.47 -0.27 -0.07	.01 .00 .02 .02 .84 .04 .24 .77	42 42 42 42 38 38 38 38
23. Tremblay, McCord, Boileau, Charlebois, Gagnon, Le Blanc, & Larivee (1991)	3	0.86 0.22 0.20	.01 .47 .50	21 21 21
24. Tremblay, Pagani-Kurtz, Masse, Vitaro, & Pihl (1995)	2	0.42 0.43	.08 .07	35 35
25. Verduyn, Lord, & Forrest (1990)	0			
26. Vitaro & Tremblay (1994)	1	0.30	.18	39
27. Winer-Elkin, Weissberg, & Cowen (1988)	1	0.48	.15	17
OVERALL:		0.29	.00	88

Table 2: Selected Characteristics Included in the Meta-Analysis

Characteristics	Number of studies	%
Race (predominantly)		
African American	3	11
Caucasian	7	26
Not specified	11	41
Mixed	6	22
Socioeconomic status		
Lower/social assistance	5	19
Lower middle	6	22
Not specified	16	59
Diagnosis (predominantly)		
Normal/no diagnosis	19	70
ADD/ADHD	3	11
Conduct disorder	3	11
Mixed/dual diagnosis	1	4
Other diagnosis	1	4

Literature Search

Several approaches were utilized to identify relevant literature. A computer search on the PsychLit, Psychological Abstracts, and ERIC databases was performed using the following words: cognitive; behavior; cognitive behavior; child; therapy; classroom; elementary; school; junior high; disruptive; disruptive behavior; behavior problem; aggression; interventions; treatment; meta analysis; and teacher. The resulting data were crossed with appropriate age group and topic constraints. The following journals for the appropriate time periods (1987 to 1997) were searched by hand because these journals seemed to have the majority of the relevant articles according to the previous search: Cognitive Therapy and Research, Journal of Consulting and Clinical Psychology, Journal of Abnormal Child Psychology, Journal of Clinical Child Psychology, Journal of School Psychology, Psychology in the Schools, and School Guidance and Counseling. The reference section of previous reviews, recent relevant publications, and articles identified in the computer and hand search were cross-referenced for articles that were included in the present analysis.

Coding

Variables included in this study were drawn from conclusions and recommendations derived from child therapy literature and meta-analyses of child and adolescent literature. The client variables included in this study were ethnicity, socioeconomic status (SES), and diagnosis (if applicable). These variables are based on previous research (Baar et al., 1991; Durlak et al., 1991; Loeber, 1982; Schneider, 1992; Singh et al., 1991; Weisz et al., 1987; Zaragoza et al., 1991). Data on ethnicity, SES, and diagnosis were drawn from descriptive information reported by the respective study author. Individuals were classified as belonging to a certain SES, ethnicity, or diagnostic category based on the author's description or exceeding 70% of the total study population.

Treatment and methodological variables in the present analysis included the following: how the treatment was measured, setting of treatment, type of treatment, effects of treatment, and effects of including a teacher-implemented contingency (Baar et al., 1991; Durlak et al., 1991; Loeber, 1982; Schneider, 1992; Singh et al., 1991; Verduyn et al., 1990; Weisz et al., 1987; Zaragoza et al., 1991). Data relative to treatment setting were drawn directly from descriptive information reported by the respective study authors.

The researcher coded all of the variables in this study. Ten articles were randomly chosen and coded independently by a second coder to obtain interrater reliability of the coding. Total agreement or 100% interrater reliability was found.

Calculation of Effect Sizes

Effect sizes were calculated from the outcome statistics in each study using the DSTAT computer software package (Johnson, 1989). This software package utilizes the following formula to obtain the effect size:

$$g = \frac{M_2 - M_1}{S_{\text{pooled}}}$$

where g is the estimated effect size, M_2 is the posttest mean for the treated group, M_1 is the pretest mean for the same group before the treatment was administered, and S_{pooled} refers to the pooled pretest/posttest standard deviation (Hedges 1982a; 1982b). An effect size was obtained with the above formula in order to compare behavior before and after cognitive behavioral treatment was implemented. When only the F or t statistics were provided in the

articles being reviewed, a DSTAT formula which decomposed the F or t was utilized to compute the effect size. When chi-square values were provided, and the chi-square value was based on two groups, a direct conversion to an effect size was performed. In studies in which multiple outcome measures were reported, such as ratings from parents, teachers, and peers, the effect size was calculated from the teacher group only. Also, if multiple treatments were compared in a study, the effect size was calculated separately for each treatment, resulting in multiple effect sizes from one study. The effect size is a reflection of the overall effectiveness of cognitive-behavioral treatment.

After each effect size, g , was calculated, mean weighted effect sizes (d) were computed using the sample size within the study as a weighting factor (See Table 1 for all d 's from each study and their probabilities). The effect size can be interpreted as the change from pre- to posttest in standard deviation units. Interpretation in these units is standardized and avoids the problem of varying metrics based on different instruments. Probabilities for each weighted effect size (d) were also calculated. To aggregate results over studies, mean effect sizes are reported overall and by various moderator variables. These mean effect sizes are also associated with probability values.

To address the question of the efficacy of cognitive-behavioral therapy, an overall mean d was calculated on the effect sizes reflecting differences between pre- and post-cognitive-behavioral treatment to determine if this result was significant. Each of the individual and treatment variables was examined to identify if the variables were differentially related to the overall effect size. Categorical model testing was completed, and study qualities were utilized to account for variability in heterogeneous effect sizes. The Q_b statistic, a measure of between group homogeneity, was calculated in order to determine if the means of the classes tested significantly differed from one another. If the Q_b statistic is significant, it implies that the means of the classes tested are significantly different from one another.

Results

This study assessed the effectiveness of CBT in decreasing disruptive behavior in the classroom by conducting a meta-analysis of existing research. The statistics in this analysis were utilized to estimate: (1) the overall effect of CBT; (2) the effect of teacher implemented contingencies; (3) the effect of treatment setting; (4) the effect of SES; (5) the effect of ethnicity; (6) the effect of diagnosis.

Data from each of the original 27 studies were critically analyzed and converted to an effect size if possible. Seven studies were omitted from the final analysis due to the insufficient data available to calculate an effect size. Of the 20 studies included in the final review, effect sizes were calculated separately for the pretreatment/posttreatment difference for each outcome measure. Each outcome measure was a teacher or independent observer rating of classroom disruptive behavior. The calculated effect size reflects overall pre-post improvement. This procedure produced 91 effect sizes. Three effect sizes were excluded from the final analysis because they were considered the largest outliers in the list, leaving 88 effect sizes in the final analysis.

The overall mean effect size for all d values was .29. This indicates that children receiving cognitive-behavioral therapy displayed an approximately .3 standard deviation improvement in disruptive behavior according to teacher and independent observer classroom

reports. This study found that teacher implemented contingencies used in conjunction with CBT were not more effective in reducing disruptive behavior than CBT alone. A nonsignificant relationship ($QB(1) = .25, p = .61$), was found between teacher implemented contingencies ($d = .27$) and non-teacher implemented contingencies ($d = .30$) for disruptive behavior. This study tested for the difference between treatment administered in a school setting ($d = .30$) versus a nonschool setting ($d = .27$). The setting of treatment was not found to be differentially related to treatment outcome ($QB(1) = .17, p = .67$). This meta-analysis tested for a difference between the low and low-middle Socioeconomic Status (SES) categories. The findings suggest that children classified as low SES ($d = .50$) showed significantly ($QB(1) = 6.6, p = .01$) greater changes in behavior than those children classified as low-middle SES ($d = .21$). A test of comparing children described as predominantly African American ($d = .24$), Caucasian ($d = .36$), mixed ethnicity ($d = .10$), or other ($d = .27$) suggests that children classified as being Caucasian showed significantly ($QB(3) = 9.60, p = .02$) greater improvements in behavior than children classified as mixed ethnicity. Finally, differences between children described as predominantly having no diagnosis ($d = .29$), ADD/ADHD ($d = .31$), conduct disorder ($d = .43$), or mixed diagnoses ($d = .11$) were calculated. The means of the four classes did significantly ($QB(3) = 7.82, p = .04$) differ from one another. The findings suggest that children classified as having a diagnosis of conduct disorder ($d = .43$) showed significantly greater improvements in behavior than did children classified with mixed diagnoses ($d = .11$).

Discussion

The results of the present meta-analysis study found that cognitive-behavioral therapy is an effective form of treatment for school-age children with disruptive behavior. This study found that overall, cognitive-behavioral interventions were associated with improvements in behavior of approximately .3 standard deviations compared to pretreatment. This study suggested that at posttreatment, according to teacher measures of disruptive behavior, cognitive-behavioral interventions are associated with improvements in behavior. After receiving the treatment, the children were functioning an average of .3 standard deviations better in level of disruptive behavior than they were at the time of the pretest. These results are comparable to other meta-analytic reviews in this area. For example, Baar and Nietzel (1991) in their meta-analytic review of cognitive and behavioral treatment of impulsivity in children, found that cognitive and behavioral interventions are associated with improvements in impulsivity of approximately one-third to three-quarters of a standard deviation relative to untreated or placebo controls. Dush et al. (1989), in their meta-analysis of self-statement modification in children, reported that the children improved by one-third of a standard deviation compared to control groups. Zaragoza et al. (1991) conducted a meta-analytic review examining social skills interventions and their effectiveness on students with behavior problems. The authors found that social skills interventions led to changes in self, teacher, and parent perceptions. The aforementioned meta-analytic reviews indicate that CBT is an effective intervention for decreasing disruptive behavior. Moreover, Zaragoza et al. (1991) stated that parents and teachers frequently perceive that the child's behavior problems decreased following intervention. The results of the present study seem to support this assumption. According to this analysis, teachers do seem to indicate that children who participate in CBT intervention programs display fewer disruptive behaviors.

The present review failed to find a difference between studies that utilize teacher-

implemented contingencies in conjunction with CBT versus studies utilizing CBT alone. Mathur and Rutherford (1991), in their review of peer mediated interventions promoting social skills of children and youth with behavioral disorders, found that teacher prompts have played an important role in effective peer-mediated interventions. The finding from this study is contrary to the literature published in this area, and several possibilities are likely explanations for these results. First, it is possible that the particular type of CBT intervention was not appropriately suited for the classroom; therefore, this would decrease the chance teacher-implemented contingencies would be effective. Second, it is possible that the particular CBT intervention or the teacher-implemented contingency were not age-appropriate for the subject. A previous meta-analytic review of cognitive-behavioral therapy for maladaptive children (Durlak et. al., 1991) suggested that subject's age may be an important factor relative to efficacy of treatment. A third possible explanation for the results found may be that the teachers were not properly trained to administer the particular CBT intervention in the classroom. Finally, it is possible that teacher bias may exist and may influence successful implementation of therapeutic techniques in the classroom.

The results from this study raise several questions. How do teachers successfully reinforce therapeutic gains obtained by children who have received CBT? Do teacher perceptions of the child influence their ability to successfully implement interventions? These questions remain unanswered and would appear to be areas for future research inquiry.

The findings from this study suggest that the subjects in this review did not show gains in terms of treatment efficacy relative to the setting of treatment. The data from the teacher ratings indicated that this variable did not significantly affect disruptive behavior. Treatment administered in a school was not found to be significantly different from treatment administered in a hospital, an outpatient treatment facility, or other settings. A possible explanation for this finding may be that the children generalized the CBT intervention, making the particular environment in which they were taught certain skills to modify their behavior irrelevant. Increased attention is needed by future researchers to further test this variable.

Client populations described as lower SES demonstrated more improvement at the end of treatment than did those considered lower-middle SES. This finding is particularly important considering that disruptive behavior in youth has traditionally been more common in lower socioeconomic groups (Carson, Butcher, & Coleman, 1988). Conditions such as an environment characterized by the breakdown of social norms and regulations, disorganization of the subjects' social milieu, and undesirable peer and family models often produces inadequate conscience development, lack of concern for others, and destructive or overt aggressive behavior (Carson et al., 1988). Traditional psychotherapeutic approaches have not proven to be effective in treating childhood disruptive behavior disorders in families of low SES. The findings from this meta-analysis indicate that CBT may be a promising treatment approach for lower income populations. This finding suggests that children from lower income level homes respond well to the cognitive structuring and organization that cognitive behavioral interventions offer. In Hoag and Burlingame's (1997) review of client variables in child and adolescent group treatment, middle class populations seemed to show greater improvement than did lower class ones. This finding is contrary to the findings of the present study. The differential effectiveness of treatment to various income populations warrants further investigation of this client variable in order to understand why lower income SES students seem to respond better to CBT interventions.

This meta-analysis found that Caucasian children seemed to benefit more from CBT interventions than did children classified as mixed ethnicity. One possible explanation for this finding may be that CBT intervention approaches are culturally biased toward a Caucasian population and may be a better match for a dominant Caucasian culture. Cognitive-behavioral therapy originated within Western culture and seems to be oriented toward Western or individualistic types of cultures. A second possible explanation for this finding may be associated with the degree of similarity of the ethnicity of the therapist to the ethnicity of the subject. Previous research demonstrates that a high degree of match between the subject's and therapist's ethnicity is correlated with more effective therapy outcomes (Carson et al., 1988). A third possible explanation for this finding may be that there were more Caucasian therapists than therapists from other ethnic backgrounds. The literature regarding cognitive behavioral treatment and ethnic variables as a focus is essentially silent. The results from this review further indicate that more research is needed in this arena.

The results from this study indicated that CBT interventions were more effective with children classified as having conduct disorder. Conduct disorder is the mental health disorder most closely associated with adolescent antisocial behavior and is the most common childhood diagnosis in both clinical and hospital settings (Kirk, Wakefield, Hsieh, & Pottick, 1999). The social and economic impact of conduct disorder is tremendous. Conduct disorder has far-reaching effects into other systems, such as families, schools, law-enforcement agencies, juvenile offender programs, mental health agencies, as well as other social systems and society in general. The findings from this study support the notion that interventions based upon CBT principles may be an effective treatment approach for this devastating mental disorder. It is not surprising that CBT is effective in the treatment of conduct disorder. Cognitive-behavioral therapy approaches are designed to alter the maladaptive cognitions of the child and, in the process, change the maladaptive affect and overtly dysfunctional behaviors of the child diagnosed with conduct disorder. The findings of this study are in line with other studies, which promote the CBT approach as a micro-intervention strategy in helping children with conduct disorder (Alexander & Curtis, 1995; Kendall, 1993).

Several limitations exist in this study. First, this study analyzed the influence of SES, ethnicity, and diagnosis, but failed to analyze other variables that may influence outcome. Future research needs to identify these and other subject, treatment, and methodological variables influencing outcome. Future research may want to identify why lower SES, Caucasian, and children having been diagnosed with a conduct disorder seem to benefit more from CBT and what factors may be involved with this. Another limitation to this study involves the reliability and validity of the instruments utilized in the outcome measures. It was beyond the scope of this study to assess reliability and validity of the instruments in each outcome measure, but future research may want to code for this.

This study calls to the literature for more outcome research on cognitive-behavioral interventions. Although the literature purports that school age children are thought to benefit from cognitive behavioral types of interventions, it is surprising that so few evaluative studies have been conducted to assess the outcome of CBT programs over the decade, 1987 to 1997, that this review examined. This meta-analysis only produced 90 usable effect sizes, indicating a need for more outcome studies analyzing the effectiveness of CBT interventions with children.

Cognitive-behavioral therapy techniques are a popular treatment approach for children exhibiting disruptive and aggressive behavior. The extent to which these procedures, used alone

or within in a multi component treatment framework, modify aggressive and disruptive behavior is still somewhat ambiguous. This meta-analysis demonstrated that children receiving cognitive-behavioral interventions exhibited fewer disruptive behavior problems at posttreatment according to classroom measures of disruptive behavior. It also showed that children who are Caucasian, from a lower socioeconomic status home, and diagnosed with conduct disorder seem to show the greatest benefit from CBT interventions.

REFERENCES

- Alexander, R., & Curtis, C.M. (1995). A critical review of strategies to reduce school violence. Social Work in Education, 17(2), 73-82.
- Baar, R. F., Nietzel, M. T. (1991). Cognitive and behavioral treatment of impulsivity in children: A meta-analytic review of the outcome literature. Journal of Clinical Child Psychology, 20, 400-412.
- *Bienert, H., & Schneider, B.H. (1995). Deficit specific social skills training with peer-nominated aggressive disruptive and sensitive isolated preadolescents. Journal of Clinical Child Psychology, 24(3), 287-299.
- *Bierman, K.L., Miller, C.L., & Stabb, S.D. (1987). Improving the social behavior and peer acceptance of rejected boys: Effects of social skills training with instructions and prohibitions. Journal of Consulting and Clinical Psychology, 55(2), 194-200.
- Bloomquist, M.L. (1996). Skills training for children with behavior disorders: A parent and therapist guidebook. New York: Guilford Press.
- *Bloomquist, M.L., August, G.J., & Ostrander, R. (1991). Effects of school-based cognitive-behavioral interventions for ADHD children. Journal of Abnormal Child Psychology, 19(5), 591-605.
- Braswell, L. (1993). Cognitive-behavioral groups for children manifesting ADHD and other disruptive behavior disorders. Special Services in the Schools, 8(1), 91-117.
- Braswell, L., & Bloomquist, M.L. (1991). Cognitive-behavioral treatment with ADHD children. New York: Guilford Press.
- Carson, R.C., Butcher, J.N., & Coleman, J.C. (1988). Abnormal psychology and modern life. Glenview, IL: Scott, Foresman and Co.
- *Dishion, T.J., & Andrews, D.W. (1995). Preventing escalation in problem behaviors with high risk young adolescents: Immediate and one-year outcomes. Journal of Consulting and Clinical Psychology, 63(4), 538-548.
- Dodge, K.A. (1986). A social information processing model of social competence in children. In M. Perlemutter (Ed.), The Minnesota symposia on child psychology: Vol. 18. Cognitive perspectives on children's social and behavioral development

(pp. 77-125). Hillsdale, NJ: Lawrence Erlbaum Associates.

- *Dubow, E.F., Huesmann, L.R., & Eron, L.D. (1987). Mitigating aggression and promoting prosocial behavior in aggressive elementary schoolboys. Behavior Research and Therapy, 25, 527-531.
- Durlak, J.A., Fuhrman, T., & Lampron, C. (1991). Effectiveness of cognitive-behavioral therapy for maladapting children: A meta-analysis. Psychological Bulletin, 110, 204-214.
- Dush, D.M., Hirt, M.L., & Shroeder, H.E. (1989). Self statement modification in the treatment of child behavior disorders: A meta-analysis. Psychological Bulletin, 106(1), 97-106.
- Elkin, I., Shea, M.T., Watkins, J.T., & Imber, S.D. (1989). National Institute of Mental Health treatment of depression collaborative research program: General effectiveness of treatments. Archives of General Psychiatry, 46(11), 971-982.
- Farrington, D.P., Gallegher, B., Morley, L., St. Ledger, R.J., & West, D.J. (1988). Are there successful men from criminogenic backgrounds? Psychiatry, 51, 116-130.
- Glass, G.V., McGaw, B., & Smith, M.L. (1981). Meta-analysis in social research. Beverly Hills, CA: Sage.
- Goldstein, S., & Braswell, L. (1994). Understanding and managing children's classroom behavior. New York: John Wiley and Sons, Inc.
- *Guevremont, D.C., & Foster, S.L. (1993). Impact of social problem solving training on aggressive boys: Skill acquisition, behavior change, and generalization. Journal of Abnormal Child Psychology, 21(1), 13-27.
- Hedges, L.V. (1982). Estimation of effect size from a series of independent experiments. Psychological Bulletin, 92, 490-499.
- Hedges, L.V. (1982a). Fitting categorical models to effect sizes from a series of experiments. Journal of Educational Statistics, 7(2), 119-137.
- Hedges, L.V. (1982b). Fitting continuous models to effect size data. Journal of Educational Statistics, 7(4), 245-270.
- Hedges, L.V., & Olkin, I. (1985). Statistical methods for meta-analysis. New York: Academic.

- Hoag, M.J., & Burlingame, G.M. (1997). Evaluating the effectiveness of child and adolescent group treatment: A meta-analytic review. Journal of Clinical Child Psychology, 26(3), 234-246.
- *Horn, W.F., Ialongo, N., Greenberg, G., Packard, T., Smith-Winberry, A. (1990). Additive effects of behavioral parent training and self-control therapy with attention deficit hyperactivity disorder children. Journal of Clinical Child Psychology, 19(2), 98-110.
- *Horn, W.F., Ialongo, N., Popovich, S., & Peradotto, D. (1987). Behavioral parent training and cognitive-behavioral self-control therapy with ADD-H children: Comparative and combined effects. Journal of Clinical Child Psychology, 15, 57-68.
- *Hudley, C., & Graham, S. (1993). An attributional intervention to reduce peer-directed aggression among African-American boys. Child Development, 64(1), 124-138.
- Johnson, B.T. (1989). DSTAT: Software for the meta-analytic review of research literature. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Kazdin, A.E. (1991). Effectiveness of psychotherapy with children and adolescents. Journal of Consulting and Clinical Psychology, 59(6), 785-798.
- Kazdin, A.E. (1993). Psychotherapy for children and adolescents: Current progress and future research directions. American Psychologist, 48, 644-657.
- *Kazdin, A.E., Bass, D., Siegel, T., & Thomas, C. (1989). Cognitive-behavioral therapy and relationship therapy in the treatment of children referred for antisocial behavior. Journal of Consulting and Clinical Psychology, 57(4), 522-535.
- *Kazdin, A.E., & Crowley, M.J. (1997). Moderators of treatment outcome in cognitively based treatment of antisocial children. Cognitive therapy and research, 21(2), 185-207.
- *Kazdin, A.E. Esveltd-Dawson, K., French, N.H., & Unis, A.S. (1987a). Problem solving skills training and relationship therapy in the treatment of antisocial child behavior. Journal of Consulting and Clinical Psychology, 55, 76-85.
- Kazdin, A.E. Esveltd-Dawson, K., French, N.H., & Unis, A.S. (1987b). Effects of parent management training and problem solving skills training combined in the treatment of antisocial child behavior. Journal of the American Academy of

- Kellam, S.G. Brown, C.H., Rubin, B.R., & Ensminger, M.E. (1983). Paths leading to teenage psychiatric symptoms and substance use: developmental epidemiological studies in Woodlawn. In S.B. Guze, F.J. Earls & J.E. Barrett (Eds) Childhood psychopathology and development (pp. 17-55). New York: Raven Press.
- Kendall, P.C. (1993). Cognitive-behavioral therapies with youth: Guiding theory, current status, and emerging developments. Journal of Consulting and Clinical Psychology, 61, 235-247.
- *Kendall, P.C., Reber, M., McLeer, S., Epps, J., & Ronan, K.R. (1990). Cognitive-behavioral treatment of conduct disordered children. Cognitive Therapy and Research, 14, 279-297.
- Kendall, P.C., & Wilcox, L.E. (1980). Self-control in children: Development of a rating scale. Journal of Consulting and Clinical Psychology, 47, 1020-1029.
- Kendall, P.C., & Zupan, B.A. (1981). Individual versus group application of cognitive-behavioral self-control procedures with children. Behavior Therapy, 12, 344-359.
- Light, R.J., & Pillemer, D.B. (1984). Summing up: The science of reviewing research. Cambridge, MA: Harvard University Press.
- *Lochman, J.E., (1992). Cognitive-behavioral intervention with aggressive boys: Three-year follow-up and preventive effects. Journal of Consulting and Clinical Psychology, 60(3), 426-432.
- *Lochman, J.E., Coie, J.D., Underwood, M.K., & Terry, R. (1993). Effectiveness of a social relations intervention program for aggressive and nonaggressive rejected children. Journal of Consulting and Clinical Psychology, 61 (6), 1053-1058.
- Lochman, J.E., & Lampron, L.B. (1986). Situational problem solving skills and self-esteem of aggressive and nonaggressive boys. Journal of Abnormal Child Psychology, 14(4), 605-617.
- Lochman, J.E., & Lampron, L.B., (1988). Cognitive behavioral interventions for aggressive boys: Seven month follow up effects. Journal of Child and Adolescent Psychotherapy, 5, 15-23.

- *Lochman, J.E., & Lampron, L.B. (1989). Teacher consultation and cognitive-behavioral interventions with aggressive boys. Psychology in the Schools, 26, 179-189.
- Lochman, J.E., Lampron, B., Gemmer, S.R., Harris, S.R. & Wyckoff, G.M. (1989). Teacher consultation and cognitive-behavioral interventions with aggressive boys. Psychology in the Schools, 26, 179-188.
York: Guilford Press.
- Loeber, R. (1982). The stability of antisocial and delinquent child behavior: A review. Child Development, 53, 1431-1446.
- Loeber, R., & Schmalings, K.B. (1985). Empirical evidence for overt and covert patterns of antisocial conduct problems: A meta-analysis. Journal of Abnormal Child Psychology, 13(2), 337-352.
- Mathur, S.R., & Rutherford, R.B. (1991). Peer mediated interventions promoting social skills of children and youth with behavioral disorders. Education and Treatment of Children, 14, 227-242.
- McCord, J.A. (1979). Some child-rearing antecedents of criminal behavior in adult men. Journal of Personality and Social Psychology, 9, 1477-1486.
- McCord, J.A. (1988). Parental behavior in the cycle of aggression. Psychiatry, 51, 14-23.
- *McGillivray, J.A., Cummins, R.A., Prior, M.R. (1988). Cognitive behavior modification of impulsive responding by hyperaggressive children in interpersonal problem situations. Australia and New Zealand Journal of Developmental Disabilities, 14 (1), 55-70.
- Meichenbaum, D.H., & Goodman, J. (1971). Training impulsive children to talk themselves: A means of developing self-control. Journal of Abnormal Psychology, 77, 115-126.
- *Omizo, M.M., Hershberger, J.M., & Omizo, S.A. (1988). Teaching children to cope with anger. Elementary School Guidance and Counseling, 22(3), 241-245.
- Patterson, G.R. (1976). Living with Children: New Methods for Parents and Teachers. Champaign: Research Press.

- Patterson, G.R., & Fleischman, M.J. (1979). Maintenance of treatment effects: some considerations concerning family systems and follow-up data. Behavior Therapy, 10, 168-185.
- *Phillips, D.R., Schwan, V.L., & Saklofske, D.H. (1997). Treatment effect of a school based cognitive-behavioral program for aggressive boys. Canadian Journal of School Psychology, 13(1), 60-67.
- *Prinz, R.J., Blechman, E.A., & Dumas, J.E. (1994). An evaluation of peer coping-skills training for childhood aggression. Journal of Clinical Child Psychology, 23(2), 193-203.
- Quay, L.C., Weaver, J.H., & Neel, J.H. (1986). The effects of play materials on positive and negative social behaviors in preschool boys and girls. Child Study Journal, 16(1), 67-76.
- Robins, L.N. (1978). Study of childhood predictors of adult antisocial behavior: replication from longitudinal studies. Psychiatric Medicine, 8, 611-622.
- Robins, L.N., & Ratcliff, K.S. (1979). Risk factors in the continuation of childhood antisocial behavior into adulthood. International Journal of Mental Health, 7, 96-116.
- Ross, A.D. (1981). Child behavior therapy: Principles, procedures, and empirical basis. New York: John Wiley and Sons, Inc.
- Robinson, T.R., Smith, S.W., Miller, M.D., & Brownell, M.T. (1999). Cognitive behavior modification of hyperactivity-impulsivity and aggression: A meta-analysis of school-based studies. Journal of Educational Psychology, 91(2), 195-203.
- Schneider, B.H., & Byrne, B.M. (1987). Individualizing social skills training for behavior-disordered children. Journal of Consulting and Clinical Psychology, 55(3), 444-445.
- *Schneider, B.H. (1991). A comparison of skill building and desensitization strategies for intervention with aggressive children. Aggressive behavior, 17, 301-311.
- Schneider, B.H. (1992). Didactic methods for enhancing childrens peer relationships: A quantitative review. Clinical Psychology Review, 12, 363-382.
- Singh, N.N., Deitz, D.E., Epstein, M.H., & Singh, J. (1991). Social behavior of students who are seriously emotionally disturbed: A quantitative analysis of intervention

studies. Behavior Modification, 15, 74-91.

Tomas, J.M., Vlahov, D., Anthony, J.C. (1990). Association between intravenous drug use and early misbehavior. Drug and alcohol dependence, 25(1), 79-89.

*Tremblay, R.E., McCord, J., Boileau, H., Charlebois, P., Gagnon, C., Le Blanc, M., & Larivee, S. Can disruptive boys be helped to become competent? Psychiatry, 54(2), 148-161.

*Tremblay, R.E., Pagani-Kurtz, L., Masse, L.C., Vitaro, F., Pihl, R.O. (1995). A bimodal preventive intervention for disruptive kindergarten boys: Its impact through midadolescence. Journal of Consulting and Clinical Psychology, 63(4), 560-568.

Velez, C.N., Johnson, J., & Cohen, P. (1989). A longitudinal analysis of selected risk factors for childhood psychopathology. Journal of the American Academy of Child and Adolescent Psychiatry, 28(6), 861-864.

*Verduyn, C.M., Lord, W., & Forrest, G.C. (1990). Social skills training in schools: An evaluation study. Journal of Adolescence, 13, 3-16.

*Vitaro, F., Tremblay, R.E. (1994). Impact of a prevention program on aggressive childrens friendships and social adjustment. Journal of Abnormal Child Psychology, 22(4), 1994.

Vitaro, F., Tremblay, R.E., Gagnon, C., Pelletier, D. (1994). Predictive accuracy of behavioral and sociometric assessments of high risk kindergarten children. Journal of Clinical Child Psychology, 23(3), 272-282.

Weisz, J.R., Weiss, B., Alicke, M.D., Klotz, M.L. (1987). Effectiveness of psychotherapy with children and adolescents: A meta-analysis for clinicians. Journal of Consulting and Clinical Psychology, 55(4), 542-549.

*Winer-Elkin, J.I., Weissberg, R.P., & Cowen, E.L. (1988). Evaluation of a planned short-term intervention for schoolchildren with focal adjustment problems. Journal of Clinical Child Psychology, 17(2), 106-115.

Zaragoza, N., Vaughn, S., & McIntosh, R., (1991). Social skills interventions and children with behavior problems: A review. Behavioral Disorders, 16, 260-275.

* indicates studies included in the meta-analysis